together. I will read it to you. Central Kitsap, Northshore, Kent, Highline, Tacoma, which we just finished, Vancouver, Mukilteo, Mead, if the board passes tomorrow night, Spokane, Puyallup, Moses Lake, Bremerton, Yakima, Shoreline, Mercer Island and Bellevue. I'm not sure where Bellevue is in the process.

CHAIRMAN NELSON: Now, those are clients of yours that you helped?

MR. JACOBS: Not all of those are clients of mine. About half of them. These are projects that I heard about that were more along the lines of what Mr. Bookey had talked about earlier. Just a few points that I would like to make, try and be as brief as possible. Because of the demand on the telecommunications budgets in schools and the pressure that's put on those budgets we would like to ask that you include a discount in the telecommunications bills. Tacoma School District with a new network, avoiding the OPS tariff is still a $300,000 bill a year. Even though their budget is much higher than that, still a goodly sum as far as I'm concerned. And the network that we put in in Tacoma is a little over $2 million for the upfront charges, the equipment, all of the U S WEST one time charges, and that is only a

third -- a third of what the network will cost overall. Ongoing charges will be another 20 to 25 percent and the rest is support, maintenance, personnel, to support the up to 32,000 students that that network is designed to support. So, again, there's pressure on the telecommunications budget.

One of the things that has come up today and everyone has been talking about are the ongoing costs, but for a moment I would like to talk about the nonrecurring costs within the local service provider's network, T1 costs. Entrance facilities in schools especially before 1975 are usually five pair, six pair drop wire. You cannot deliver a T1 on that. So the school district incurs the cost of trenching and putting in conduit to a telephone pole or to the property line where U S WEST will then connect to it and pull in new wire for a T1. This can range anywhere from -- one of them we did was about $1500 and I think the largest one that we had to do was $12,000. So those kind of costs as well. They're not direct from the telephone company itself but they are part of delivering that service.

Another pressure on the telecommunications budget is the new 911 requirement for any systems that go in after January 1st, 1997. Those systems have to

give a location within a school and a classroom. That's the big problem. Within schools it has been a tradition and a very good practice to save money and use intercom systems behind key systems. Once you put in a key system everything looks the same and then you put an intercom behind it, there's no way that you can pass a classroom location to the 911 service. What this forces is the schools to buy a much more expensive either hybrid or PBX to put on the end of this digital service that everyone is talking about. Estimated cost for an elementary school, a key system can cause 10, $12,000. A hybrid PBX you're looking at 35, 30, 35, somewhere in there.

CHAIRMAN NELSON: Now, that's a state requirement?

MR. JACOBS: That's a state requirement.

CHAIRMAN NELSON: Or is that FCC requirement?

MR. JACOBS: No, it's not, but it's pressure on the telecommunications budget as well. I think the last point that I would like to go into is we've heard in testimony today that it's a good practice to have volunteers wire schools, and there are a couple of problems with that. Within the wiring industry manufacturers, there are certified people to

install category 5 or ten base T wiring. There are very stringent requirements for that, because not only are we buying the ten megabyte service today that we may use but the ability to use it for 100 megabytes in the future. When we have that requirement volunteers typically don't have the expertise let alone the certification to install that, and then if you talk to L and I, any work is a prevailing wage contract, and I've been through this two or three times with different school districts trying to figure out apprentices or some way to lower costs of wiring schools, and L and I will not budge on this subject. It is prevailing wage, and school districts don't want to put themselves in the situation of having to go back and pay volunteers.

One of the costs that we've talked about today is wiring schools. That's a hidden cost, and if you would like more information on it we're designing LANs for Spokane School District. We're in the middle of that project but two of the high schools are within $20,000 of $300,000 a piece to wire for local area networks within that school. So, I would hope that however this comes out and whatever influence you have within the FCC that this money being dispersed would go into the school budget some way, not just for

offsetting telephone bills but maybe some grant type of funding for wiring schools or that kind of mechanism.

JUDGE FFITCH: Any questions?

CHAIRMAN NELSON: Well, let's just explore that last point a little bit. Grant type of funding. A lot of people don't want to create a huge administrative bureaucracy to do this. How would we set up something that would be simple that one could assume that the money reached its intended destination?

MR. JACOBS: We are talking about the federal government? I'm not sure how to do that. I do know that there are a lot of schools that have wonderful programs from the way I look at them. They're cost-effective and that sort of thing and they don't get funded in their grant program. I am not sure how to -- that mechanism.

CHAIRMAN NELSON: I should tell you, the way we do universal service now we have some -- the interexchange carriers mostly collect the money and then it's handed out to a universal couple thousand carriers. There's more than 100,000 school districts in this country so you can see the administrative --

MR. JACOBS: Nightmare.

CHAIRMAN NELSON: Just setting up the right institution becomes a problem and then sort of insuring that the funds really are used and for their intended purposes is a big challenge, so any help you can provide in that, if you get a brainstorm after this hearing please let us know.

COMMISSIONER GILLIS: Just to follow up on that. You listed a fairly long list of school districts in this state that already are utilizing some high speed access to Internet, data access to the schools.

MR. JACOBS: Infrastructure within the school districts.

COMMISSIONER GILLIS: Are there any creative examples in that list of the way schools have put together the upfront money to construct the necessary infrastructure?

MR. JACOBS: Creative examples. At one of the school districts they went to the bond market and sold bonds. Because of savings on their telecommunications budget they can pay this off in a certain number of years. I don't know about any other other -- as a consultant we try not to ask too many questions. They say, yes, we have the money, go ahead and do it. I do know that one.

COMMISSIONER GILLIS: So it's been mostly through standard bonding or taxation. There haven't been -- it hasn't been through fund raising or seeking private donations, those kind of things.

MR. JACOBS: Correct. Because there is a breakeven point compared to most of the services that they're using -- that they were using prior to the network.

COMMISSIONER GILLIS: You mentioned you're involved with wiring schools. Are schools typically wired for every classroom or are there centers within the school or what's the typical?

MR. JACOBS: It depends on the school district, and the board requirement for the number of computers to student. Tacoma and Spokane school districts are using a wire -- fiber to the classroom design that actually works out cheaper than multiple category 5 connections to that classroom, so that fiber is connected to the classroom and then there's a small hub that is put on it and category 5 wire is run within the room, and actually when I mentioned the 300,000 mark that's saving -- there are savings included in that from wiring it with a standard category 5 situation where you have an MDF and you wire out from that, then you run fiber to an

intermediate distribution point, then you wire to that as well.

COMMISSIONER GILLIS: Thank you.

CHAIRMAN NELSON: One more question. Have you found wireless LANs could be useful?

MR. JACOBS: When we were doing Stadium High School in Tacoma I wish we could have used them because it was a nightmare. Actually, the wireless LANs are not -- not generally in the high speed arena that we're looking for in a school of ten megabits or more.

JUDGE FFITCH: Thank you very much for your comment. Wally Fowler.

MR. FOWLER: Thank you. My remarks will be mercifully brief. I'm Wally Fowler from TDS Telecom. I'm the director of commercial market for the western region of TDS Telecom. TDS Telecom is an independent telephone company which is made up of 105 rural independent telephone companies around the country. Our western region headquarters is in Washington state, and there are three companies in Washington state that belong to the TDS Telecom family of companies. That's McDaniel, Lewis River and Asotin telephone companies, so we are a local exchange provider in the state of Washington as well as many

other places.

And a couple of remarks that I would like to make is that, as I said, our business is rural telephone companies, so we're certainly no stranger to the problems and opportunities of rural telephone companies and have been working with them for many years, and, in the rural landscape, our rural telephone companies find themselves working very closely with the local schools and the local libraries. Number one, of course, are large customers but as well as partners in the community so that our local telephone companies are aware and become part of the planning process of upgrading the telecommunications infrastructure in the libraries and schools in the rural community, as well as participating in supportive programs like scholarship programs and essay contests, and very often some of our people will be teaching courses at the local schools from time to time.

Over the last couple of years with the advent of information super highway notions and requirements and the new Telecommunications Act, we've been working very closely with the schools to answer the question how, for example, do we get Internet in the schools, which is a very common question posed to

us. TDS Telecom has an Internet company and in many cases we will work out at a discount a schedule where our TDS Net company can become the Internet provider. When that's not the case, and it isn't always, we also work out with the schools a partnership with other Internet providers which may be in the local calling area of our schools, schools and libraries.

Insofar as the question of discounting goes, we've been working with the schools and libraries for some time to explore within the regulatory framework we have at our disposal to offer those discounts, be it Centrex within the Centrex discount structure, or some other handle that we have to provide a discounted service to schools and libraries, and we've been doing that for some time.

I guess the point that I would like to make is that we've gone a long way towards, number one, providing the services that are required by the schools and have made probably some pretty good progress in providing those services at a discount or at a fairly aggressive price. We have some facility to provide flow through discount from our position as an authorized distributor of some of the major telecommunications manufacturers, for example. When we look at the issue of subsidies, et cetera, in that

very broad issue, some of the things that come to our mind is, number one, there are school districts and libraries that need financial help. There are those that actually do not because we've been able to find other resources to satisfy those telecommunications needs that they do have. In a number of areas where funds have been required to get the very large expenditures in telecommunications covered, we have participated in grant programs, both local grant, Department of Commerce grants. We have participated with the schools in helping them frame and support bond issues, for example, not in Washington but in, for example, state of Oklahoma, we cooperated with Southwestern Bell and the local educational service district to put together a bond issue which was passed which resulted in an asynchronous transfer mode learning distance in Oklahoma.

I think in the question and answer to the previous speaker it was brought up the grant programs which have worked so well for us suggest that there's a large bureaucratic infrastructure that those who are with the grant programs certainly don't deny that. I think an advantage of the grant program is that each individual situation is evaluated on a case by case basis. That's the advantage of a grant program rather

than a broad brush subsidy which is kind of in a scattered shot approach. That concludes my comment.

JUDGE FFITCH: Questions.

CHAIRMAN NELSON: Yeah. Earlier speaker mentioned concerns about the inflows and outflows of funds from state to state if it is truly a national fund. Since you operate in many states do you have a view of that? Is there a way we could invest the money where it's raised state by state? Can you think of a federal program on how that could be accomplished?

MR. FOWLER: I recognize the problem. I certainly don't have a ready solution. Where we do work what we find is each one of our telephone companies has more unique problems than problems that can be aggregated and I think analyzed state by state necessarily. Some of the major things that we're getting used to on a state by state basis is some states have passed a local competition docket which has changed the planning that we have to deal with that. But when it comes to libraries, school districts and so forth, from our point of view, we best serve them by looking at their own situations on a state by state basis -- on a case by case basis rather than a state by state or total company basis,

for that matter, and I think that's part of our advantage and part of the rural advantage, really, is that the closeness of our working relationship with the schools and libraries lets us do that. I don't have a great inspiration to answer that particular question that you posed.

CHAIRMAN NELSON: Well, I do recognize local school district autonomy is a real sacred cow in this country, and so to set up a national program that dictates to them that they will do the same thing everywhere I think has a real potential political outrage factor with it and we just heard our 911 rule, which was set up for very good practical purposes, now may be disadvantaging schools with that location requirement and so on, so appreciate your remarks. If you get any brilliant ideas about how to do this administratively simply, I would appreciate it. Commissioner Gillis?

COMMISSIONER GILLIS: No.

JUDGE FFITCH: Marie-Anne Harkness, Marie-Anne Harkness here?

CHAIRMAN NELSON: She took off. I think she left a letter.

JUDGE FFITCH: Larry Berg.

MR. BERG: Good afternoon, Commissioners,

Judge ffitch. I'm going to be speaking wearing several different hats here. The first hat I would like to wear is that of a husband of a primary school teacher, and while my wife Karen has not specifically authorized me to make any comment on her behalf, I am reasonably certain that I will not betray any marital confidences here this afternoon. While a certain level of technological implementation in schools can be achieved by placing on-line specialists in schools, ultimately all teachers need to be proficient in accessing information technology resources. This objective can be met by integrating informational instructional technology into core education curriculum, but, more importantly, we need a just, reasonable and affordable continuing education program for teachers who are currently licensed. Teachers should be provided on-the-job training. To the extent that justice was not obtainable (inaudible) that's the justice part of the formula is on-the-job training.

Then an affordable continuing education program is vital. I confess that I'm beginning to exhibit some early warning signs of becoming a grumpy old man someday very soon because I can't believe how expensive things cost these days, but in particular I am thinking of private sector specialized training

programs for primary school teachers. I can get continuing legal education units as a lawyer cheaper than my wife can get units as a primary school teacher.

The other hat I would like to throw on here is as general counsel to a business known as Interconnected Associates, also referred to by the acronym IXA here in Seattle. IXA is a regional business-to-business Internet service provider. IXA has approximately 40 clients who are also Internet service providers providing dial-up service to their clients. IXA has donated a T1 connection for Nova alternative school in the Seattle School District. This program was selected because it shares many values with IXA's business and we believe that these students will benefit most (inaudible). However, this is not a closed end commitment because there is no traditional curriculum place which can be talked or passed down in the classroom. Consequently, IXA continues to provide training and support to Nova. While private sector infrastructure providers can be encouraged to follow IXA's example and the examples of others, this contribution of infrastructure will be de minimus unless training exists to utilize and integrate this resource into the curriculum. Can

universal service contributions be used to meet these needs? Teacher training is fundamental and the cost of passing this buck may be greater than a dollar. Any questions?

JUDGE FFITCH: Any questions?

COMMISSIONER GILLIS: Just a quick comment, that I think you're right as far as the need for continuing teacher education. These technologies are worthless if people don't know how to use it and schools and teachers are the ones that are openly responsible. I wanted to ask you, if it is late in the day, sort of a philosophical question. Whose responsibility is it to make sure that teachers are appropriately trained?

MR. BERG: Well, again, if somehow I was funding the technology equipment that's going to get used I would feel very uncomfortable knowing that I am going to put this technology in the classroom, or I'm somehow going to underwrite providing this resource, and then I'm going to trust it to some other entity to make sure that someone knows how to use it. This is what I meant about passing the buck being greater than a dollar. Although we may find ourselves in a situation where nobody has the power or the ability to bring all of these factors to fruition at the same

time, I would hope that there could be some acknowledgement and recognition that there is a human component to this, that we can talk about the importance of educating our kids as much as we want. We can talk about the importance of creating infrastructure into the schools as much as we want, but if a teacher is going to be embarrassed by trying to use the technology that is going to just disrupt her classroom in the process, they're not going to use it, the cost may have to be shared. I'm sure the school district certainly has a vested interest in making sure their teachers are proficient. Teachers themselves have an interest in making sure that they are proficient, but, at the same time, if somebody is going to be funding the infrastructure component, you know, I wouldn't want to buy a car and give the keys to someone who doesn't know how to drive it.

COMMISSIONER GILLIS: Thank you.

JUDGE FFITCH: Karen Notsund.

MS. NOTSUND: Good afternoon. My name is Karen Notsund, and I am the regulatory manager of the Teleport Communications Group. Teleport Communications Group is a nationwide provider of telecommunications services and we're a local exchange carrier in 13 states including in Washington. We have

a Seattle network which runs from Tacoma, fiberoptic network which runs from Tacoma to the Canadian border. And TCG supports here and in the other states a discount for schools and libraries because we recognize that it's important to get high speed services to these organizations and that they are operating within limited budgets. However, I would like to reiterate the position that I've heard several times today, that I do think competition is what will also bring a lot of the benefits that one would expect to get from discounts to schools and libraries.

Although we have only been -- we've been certified to be a competitive local exchange carrier since 1994 we're still lacking a formal and comprehensive interconnection agreement to really effectively compete against the incumbent. Once we are able to do so TCG will be one of many, I'm sure, local exchange carriers who are going to compete for the services -- to provide services to schools and libraries.

We've already done that in other states, and an example that I have is we won a terms contract for the Oakland Public Schools District not too long ago, and we won that bid by coming up with a more creative solution to the district's school needs than

had been proposed by the incumbent and because we, under our bid, we would be saving them $640,000 over the three year contract.

We worked extensively with the district staff to determine what their needs were and what would be the best solution for them and put together ultimately the winning bid. I think that demonstrated that the district could make a good economic decision. This was without the discount and they were clearly the beneficiary then of having more than just one company who could bid on their contracts. However, as I said, we do support discounts for schools and libraries.

I think there are three key elements to consider in that, and one is flexibility in determining what services are eligible for the discounts. In California they had suggested a list of a few services, and as we've heard from some of the schools today, all different schools have different needs and have different -- come from different starting points and they're in the best position to determine what services they need, and it should be up to -- it should be left flexible to decide which transmission services are eligible for the discounts.

The discount also should be carrier and

technology neutral so that, again, we're putting the decision making into the hands of the schools and libraries. They can decide what they need and hopefully put that out for competitive bid and see which provider with which package of services best meets their needs at the lowest pricing. I would also suggest, however, though, in order to balance the need to promote competition and make sure there is a robust market with the need to offer affordable services to schools and libraries that there be a cap on the fund, that it not be just this wide open fund with subsidies without any limit to schools and libraries and that instead there be a cap, at least initially, so we can let competition get rolling and provide some of the benefits without just going straight to the subsidies. That's all I have to say today.

JUDGE FFITCH: Thank you. Questions?

CHAIRMAN NELSON: Do you have any idea what size fund we're talking about?

MS. NOTSUND: I don't have a recommended amount. In California they suggested $20 million and we were comfortable with that.

CHAIRMAN NELSON: Ameritech has been around. They've got some sort of formula for figuring out a cap on funding a school or school district --

I'm not sure which -- can receive. Some districts have a lot of schools and others that have only a few. How does that sound to you?

MS. NOTSUND: Well, I think any time you start putting parameters around it you run the risk of leaving out certain groups. Another one that we've run into is we're putting on a bid where a county wants to link together its schools and libraries and some government offices and so any time you say it's targeted at just the district or just the schools, then you don't allow for the creativity to come up with ways of linking them and perhaps excluding the schools that would like to go into a partnership with any of the government agencies or libraries in their areas.

So, again, that's where I think the discount off of tariff prices seems a reasonable alternative. Discount off of company's best price to a commercial business is another alternative but something where you're kind of putting out the menu of services and offering a discount off of that and putting the decision making in the schools and libraries as to how they want to put their systems together either singly or with other entities.

CHAIRMAN NELSON: So your proposal, if what

I think I just heard, is that you wouldn't need a fund at all. You would have every carrier, say, discount a certain amount and let the schools pick and choose among the discount offer.

MS. NOTSUND: No. The fund would pick up the difference between the discounted price and the --

CHAIRMAN NELSON: And the tariffed or best commercially available rate, okay, thank you.

COMMISSIONER GILLIS: I'm still having a little trouble following that concept. You mentioned the flexibility in deciding what services you receive a discount. What entity receives the flexibility? Is it the company or the user that makes that decision?

MS. NOTSUND: What we had recommended before, that the carrier be allowed to offer -- that the telecommunications carrier be allowed to offer the discount off of its -- off of any of the services that it provides, any of the transmission services, and typically with a school or a library would be on a contract basis. So it's just so that as technology changes that you don't identify certain services and then they become outdated and you have to go about -- you've added a new service on to your tariff and you have to petition that to be eligible for the discount. You just make it a little bit more open so that

anything that fits a certain criteria or, as I said, is a transmission service would automatically meet the discount criteria.

COMMISSIONER GILLIS: So would you visualize a situation where there's two competitors, company A and B, and they might discount a different service at the same time, is that what you're saying, depending on what their preferences is with the marketing packages?

MS. NOTSUND: Two competitive carriers may offer different discounted services. I suppose that could happen and then, as I said, as they were putting together an offering for a school or a library came to them, it would depend on which service was most attractive to them. One way that we've talked about as far as capping the fund is that the state set what the discount should be and if a carrier decides to discount even more deeply than that that your draw from the fund is limited to the state mandated discount off of the tariff.

COMMISSIONER GILLIS: Thank you.

JUDGE FFITCH: Anything else? Thank you very much. Dennis Small.

MR. SMALL: Good afternoon. My name is Dennis Small. I work at the Superintendent of Public

Instruction in Olympia and I'm the educational telecommunications supervisor there. Mouthful. Basically means I work with schools on how to use telecommunications in the classroom. Several pieces of information I think might be helpful today. First of all, we've just completed a survey with the help of the Northwest Regional Lab out of Portland of about 28 percent of the school buildings in the state, and as of this time, and this is obviously extrapolating, somewhat dangerous, but it at least gives us a picture in time of approximately two thirds of the buildings have some kind of local area network right now and 81 percent plan to have one by June of 1997. About half of the school buildings surveyed have a wide area network and approximately 66 percent of elementary buildings and 83 percent of high school buildings have some level of Internet access. Not necessarily for instructional purposes but just access in general. Student access ranges from almost none in some of those connected places to nearly 20 percent of the buildings where there is universal access, and it's a major tool in the structural process. And so what we see in the state of Washington is a wide range of nonconnectivity all the way up to ubiquitous connectivity within a given school district or school

building.

The other task I will share with you is that 160 of the 296 districts have a high speed routing connection to the Internet at someplace in their district. Doesn't mean it reaches all the district necessarily but at some point in their district they have at least a 56 kilobit lease line running a high speed routing connection to the Internet. So over half of our school districts have some form of connection at someplace in the district. We also know that student use of that, of Internet, tends to be primarily for information access, approximately 89 percent. Classroom projects, 69 percent and E-mail about 35 percent. So, again, it's becoming a constructional tool in many part of our classrooms that have that kind of access.

One of our major concerns with the proceedings and the rulemaking is that affordability for our schools means very different things in very different places, and to be truly affordable there has to be some level of flexibility and not just kind of a standard discount that applies everywhere. We've seen discussions from an organization called Ed Link that has kind of a range of approximately 30 to 70 percent discount based on the economic conditions of the local